



The TMDD Standard

Data Integrator for Infrastructure Information

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Acknowledgements

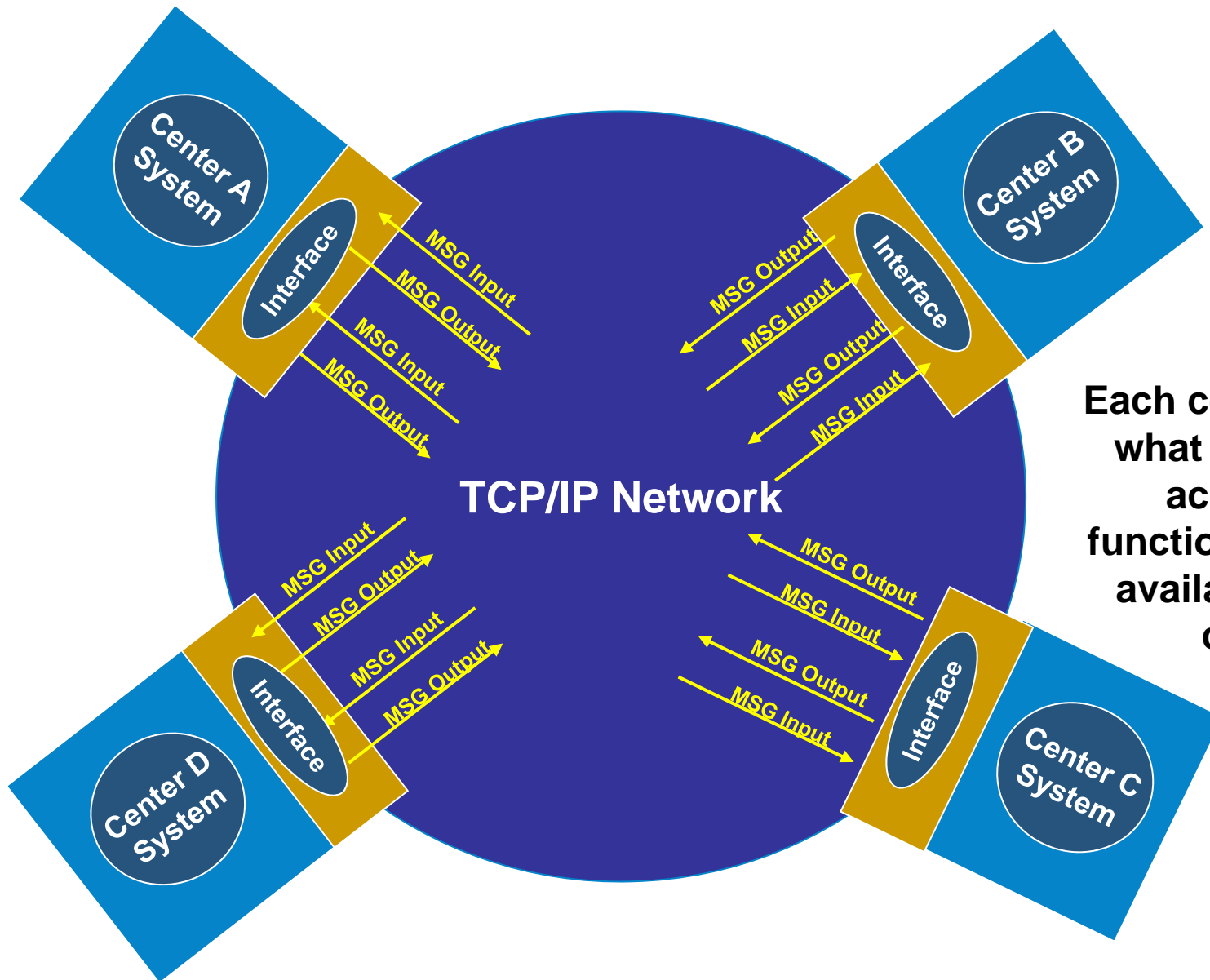
- **Robert G. Rausch, TransCore**

Presentation Outline

- **Background**
- **Center-to-Center “Big Data” Initiatives**
- **Conclusions**

Background

- **Traffic Management Data Dictionary (TMDD)**
 - ITS Standards that defines messages and data elements for information exchange between a traffic management center and other traffic management centers
 - Traffic Network
 - Events
 - Traffic Devices
 - Goal of TMDD is to support the development of system interfaces between centers
 - Primarily real-time information exchange



Each center controls what information, access, and functions they make available to other centers.

Background

- **Version 3.0**
 - Incorporates feedback received from deployments of the standard (CARS, TRANSCOM, TxDOT, FDOT)
 - Addresses additional areas of scope
 - Addresses issues unresolved from earlier versions of the standard.
 - Extends support for the Clarus initiative (real-time atmospheric and pavement observations) and the Archived Data User Service (ADUS) standards effort.
- **Currently Version 3.03c**
 - Approved July 2014

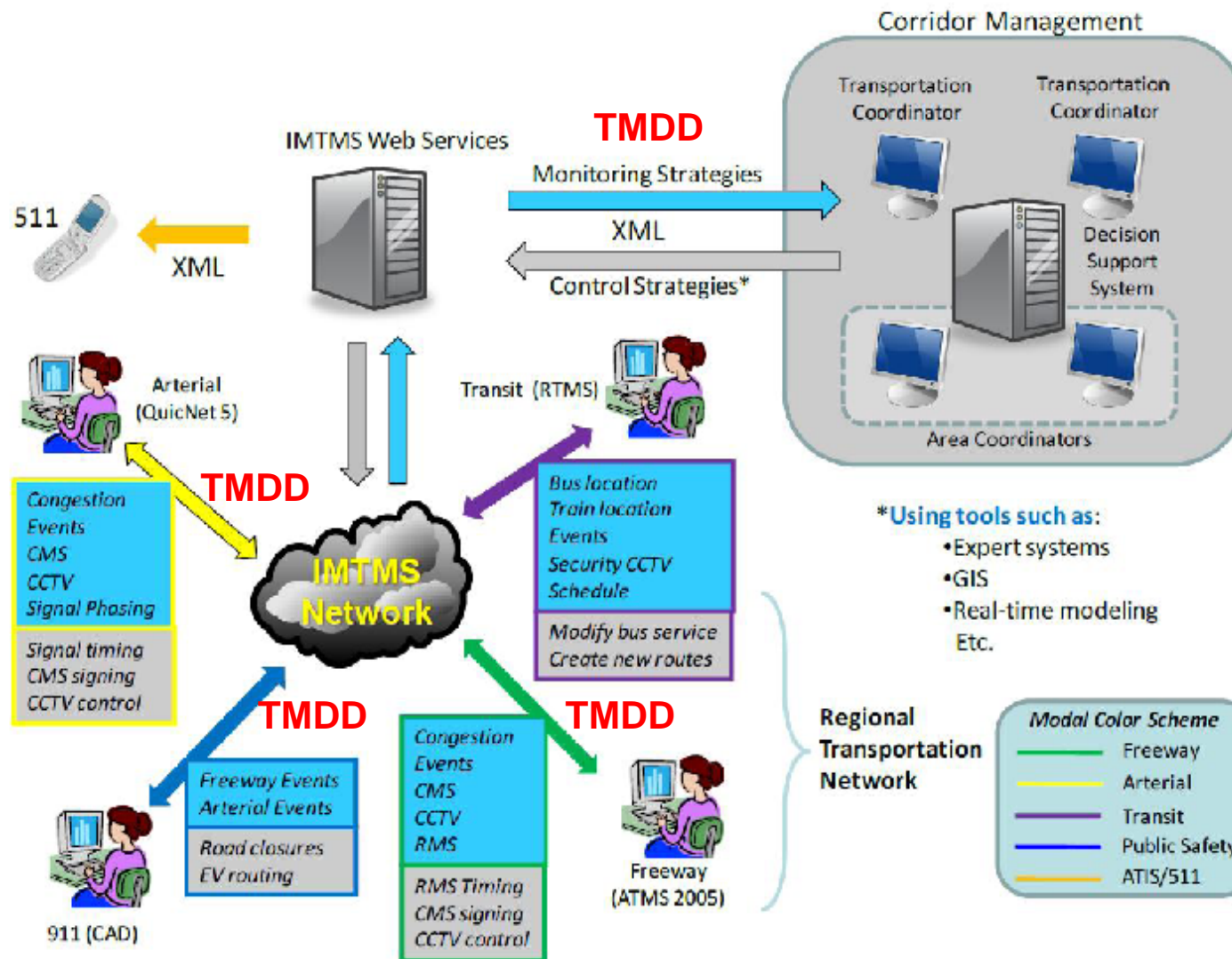
Center-to-Center “Big Data” Initiatives

- **Integrated Corridor Management**
- **Connected Vehicles**
- **Data Aggregation Clearinghouse**
- **Real-Time System Management Information Program (RTSMIP)**
- **Reference Implementation**

Integrated Corridor Management (ICM)

- Optimizes the use of existing multi-modal transportation assets and leverage unused capacity along transportation corridors
 - Multiple agencies jointly manage a transportation corridor
- Relies on the exchange of transportation data between partner agencies
- San Diego uses TMDD v3.0 to collect current traffic conditions
 - Also has implemented region-specific extensions
 - Transit
 - Parking
 - High Occupancy Tolling (HOT) lanes
 - Simulations & Network Prediction Models

San Diego Integrated Corridor Management



Connected Vehicles

- Standards development has primarily focused on V2V and V2I
- Some applications require interfaces between two management centers
 - Primarily dynamic mobility and real-time data capture applications
 - TMDD supports:
 - Detector Information
 - Travel times and speeds
 - Traveler Information
 - Traffic controller information
 - TMDD currently does not support exchange of raw vehicle data (e.g., vehicle location) but can be easily expanded to support this data

Data Aggregation Clearinghouse

- Collection, aggregation, and distribution of surface transportation data is a key capability for RTSMIP, ICM and Connected Vehicles
- TMDD supports:
 - Collection of current transportation data from multiple sources
 - Redistribution of validated/verified/fused data to centers and agencies
- Currently being deployed in Nevada and New York City Metropolitan area.

Real-Time System Management Information Program (RTSMIP)

- Section 1201 of SAFETEA-LU in the United States required State DOTs and other responsible agencies to establish a RTSMIP by November 2014 on all interstates and other significant roadways by November 2016.
 - USDOT developed a Data Exchange Format Specification (DXFS) to assist agencies
- TMDD was identified as a key standard for DXFS
- DXFS references TMDD to fulfill most requirements identified by RTSMIP
 - Exceptions are transit-specific information and some weather alert information

Reference Implementation

- TMDD only useful if the interface and contents can be verified and validated
- USDOT developed a C2C Reference Implementation (RI) tool
 - Standardize the development of:
 - Test Plans
 - Test Cases
 - Test Procedures

Conclusion

- Tool to successful deployment of data collection and integration efforts
 - Widely Deployed
 - Testable
 - Supports much of the data that will be exchanged
- Key component of successful ICM, RTSMIP and Data Aggregation deployments
 - Can be a key component of Connected Vehicles applications
- Continued maintenance of the TMDD Standard to serve needs of these next generation deployments
 - Next iteration of TMDD Standard should include expanded support for ICM, RTSMIP, Data Aggregation and Connected Vehicles
 - Next Maintenance cycle is starting!



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THANK YOU!